

Claims

1. A process for the production of hydrocarbons comprising:
 - a) subjecting a hydrocarbon feedstock to steam reforming by
 - i) dividing the feedstock into first and second streams,
 - ii) mixing the first stream with steam, passing the mixture of the first stream and steam over a catalyst disposed in heated tubes in a heat exchange reformer to form a primary reformed gas,
 - iii) forming a secondary reformer feed stream comprising the primary reformed gas and the second hydrocarbon stream,
 - iv) partially combusting the secondary reformer feed stream with an oxygen-containing gas and bringing the resultant partially combusted gas towards equilibrium over a secondary reforming catalyst, and
 - v) using the resultant secondary reformed gas to heat the tubes of the heat exchange reformer, thereby producing a partially cooled reformed gas,
 - b) further cooling the partially cooled reformed gas to below the dew point of the steam therein to condense water and separating condensed water to give a de-watered synthesis gas,
 - c) synthesising hydrocarbons from said de-watered synthesis gas by the Fischer-Tropsch reaction and separating at least some of the synthesised hydrocarbons, to give a tail gas, and
 - d) incorporating at least part of said tail gas into the secondary reformer feed stream before the partial combustion of thereof.
2. A process according to claim 1 wherein the second hydrocarbon stream comprises between 5 and 50% by volume of the hydrocarbon feedstock.
3. A process according to claim 1 or claim 2 wherein carbon dioxide is separated from the synthesis gas prior to synthesis of the hydrocarbons and is added to the secondary reformer feed stream before the partial combustion thereof.
4. A process according to claim 3 wherein the tail gas and second hydrocarbon stream are combined and added to the primary reformed gas separately from the separated carbon dioxide.
5. A process according to any one of claims 1 to 4 wherein the de-watered synthesis gas is subjected to a step of hydrogen separation before it is passed to the Fischer-Tropsch hydrocarbon synthesis stage.

6. A process according to any one of claims 1 to 5 wherein the catalyst disposed in heated tubes in the heat exchange reformer comprises a nickel catalyst and/or a precious metal catalyst.